Name:_____ Date:_____

Transformations

Given each original function, ***describe*** each transformation in terms of the original function.

1. $y = x^2$
   (a) $y = x^2 - 2$
   (b) $y = (x-2)^2$
   (c) $y = x^2 + 2$
   (d) $y = (x+2)^2$
   (e) $y = (-x)^2$
   (f) $y = -x^2$
   (g) $y = -(x+1)^2$
   (h) $y = (x-1)^2 + 3$
   (i) $y = (x+3)^2 - 1$
   (j) $y = 2 - (x-4)^2$

2. $y = |x|$
   (a) $y = |x| - 2$
   (b) $y = |x-2|$
   (c) $y = |x| + 2$
   (d) $y = |x+2|$
   (e) $y = -|x|$
   (f) $y = -|x+1|$
   (g) $y = -|x| + 1$
   (h) $y = |x+3| - 2$
   (i) $y = -|x| - 2$
   (j) $y = -|x-1| + 3$

3. $y = \sqrt{x}$
   (a) $y = \sqrt{x-1}$
   (b) $y = \sqrt{x} + 2$
   (c) $y = \sqrt{x+2}$
   (d) $y = -\sqrt{x}$
   (e) $y = -\sqrt{x+1}$
   (f) $y = \sqrt{x} - 3$
   (g) $y = -\sqrt{x} + 2$
   (h) $y = -\sqrt{x-3} + 1$
   (i) $y = -4 - \sqrt{x}$
   (j) $y = \sqrt{x-1} + 2$

4. $y = x^3$
   (a) $y = (x-1)^3$
   (b) $y = x^3 - 4$
   (c) $y = -x^3$
   (d) $y = -(x+2)^3$
   (e) $y = (-x)^3$
   (f) $y = 2 + x^3$
   (g) $y = -4 - x^3$